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IS 7018-1 (1983): Technical supply conditions for gauges, Part 1: General [PGD 25: Engineering Metrology]

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UDC 621·753·3

IS : 7018 (Part 1) - 1983

Indian Standard **(Reaffirmed 1998)**

TECHNICAL SUPPLY CONDITIONS FOR GAUGES

PART 1 GENERAL

(*First Revision*)

Engineering Metrology Sectional Committee, EDC 43; Gauges Subcommittee, EDC 43 : 3 [Ref : Doc : EDC 43 (4020)]

1. Scope — Covers technical supply conditions for gauges for linear, angular and thread measurements.

2. Material — The material of the gauges shall be a suitable quality gauge steel or hard metal having the property of retaining dimension during ageing and heat treatment, and should be wear-resistant. In the case of hard-layer-deposited gauges, the base material should be of good quality. Suitable examples of steels from IS : 1570-1961 'Schedules for wrought steels for general engineering purposes' and IS : 1570 (Part 2) - 1977 'Schedules for wrought steels : Part 2 carbon steels (unalloyed steels) (*first revision*)' are given below :

Steel Designation	*Reference*
T215Cr12 T105Cr1Mn60 T105Cr1 T90V23	Schedule VI of IS : 1570-1961
17Mn1Cr95 20MnCr1	Schedule IV of IS : 1570-1961
15C4	IS : 1570 (Part 2)-1979

3. Hardness — The measuring surfaces of the gauges shall have a hardness of 700 HV (60 HRC), *Min* [*see* IS : 1501-1968 'Method for Vickers hardness test for steel (*first revision*)' and IS : 1586-1968 'Method for Rockwell hardness test (B and C scales) for steel (*first revision*)']. In the case of hard-layer-deposited gauges and also gauges having thin cross-sections, hardness should be checked using a micro hardness tester.

4. Tolerances

4.1 For dimensions without tolerances on gauges with plain and cylindrical surfaces, the medium class of deviations according to IS : 2102 (Part 1)-1980 'General tolerances for dimensions and form and position : Part 1 General tolerances for linear and angular dimensions (*second revision*)' shall apply.

4.2 The form tolerances of the plain gauges shall be in accordance with IS : 3455-1971 'Gauging practice for plain workpieces (*first revision*)'.

5. Inscriptions — The inscriptions shall be legible and free from burrs. Inscription by pressing, rolling or punching shall be permitted only on non-measuring surfaces. Surfaces shall be carefully cleaned and free from acid residues.

6. Surface Finish — The average roughness value R_a for the measuring surface shall be as given in Table 1 depending upon the manufacturing tolerence for the measuring surface.

TABLE 1 PERMISSIBLE AVERAGE ROUGHNESS VALUES R_a FOR MEASURING SURFACES

Values in µm.

Manufacturing Tolerance for the Gauge Dimension		R_a*	
Above	Up to and Including	Plain	Threaded
±0·8	±1·5	N2	N3
±1·5	±4	N3	N4
±4	±10	N3	N5
±10	±25	N4	N5

**See* IS : 3073-1967 Assessment of surface roughness.

7. Workmanship

7.1 The gauges and gauge members shall be well finished, free from defects which may affect their serviceability and shall be consistent with the grade of the product.

7.2 The gauges and gauge members shall be demagnetized.

Adopted 2 November 1983

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7.3 All sharp corners and edges of measuring surfaces shall be removed with a radius/chamfer of 1 mm, *Max.* Incomplete starting threads on thread gauges shall be removed and blunt start shall be provided. The gauges shall be free from burrs.

7.4 Whenever grooves or recesses are provided for colour coding, they shall be of 0·3 mm depth and minimum 2 mm width and their bottom corner shall be suitably rounded.

8. Marking

8.1 *Plain Gauges* — The plain gauges shall be marked with the following :

- a) Nominal size;
- b) Tolerance class, type of fit and/or limiting dimensions;
- c) The words 'GO' and 'NO GO' on GO and NO GO gauges respectively; and
- d) Manufacturer's name or trade-mark.

8.2 *Threaded Gauges* — The threaded gauges shall be marked with the following:

- a) Nominal size;
- b) Tolerance class;
- c) The letters 'CP' after tolerance class, for check plug gauges;
- d) The words 'GO' and 'NO GO' on GO and NO GO gauges respectively; and
- e) Manufacturer's name or trade-mark.

8.3 The NO GO gauges shall be painted with red paint on the groove.

8.4 *ISI Certification Marking* — Details available with the Indian Standards Institution.

9. Packing — The gauges shall be suitably protected against climatic conditions by application of a suitable anti-corrosive coating. The gauges may then be packed in suitable cases to prevent damage in transit or storage.

10. Inspection and Acceptance Procedure — Shall be mutually agreed to between the supplier and the purchaser.

EXPLANATORY NOTE

This standard on technical supply conditions for different types of gauges, issued in various parts, has been brought out to avoid mentioning on the standard sheets or drawings of gauges the details which are of repetitive nature and which supplement the details already existing. It would be enough to refer to this standard wherever the gauges are to comply with these requirements.

This standard (Part 1) was originally published in 1973. It has now been revised to bring it in line with the latest manufacturing practices in this field in the country. The clauses on tolerances and marking have been modified. Examples of marking of the gauges have been excluded as it was found difficult to give examples for so many types of the gauges.

Separate surface quality classes had been provided for the measuring surfaces of plain and threaded gauges. It was hoped that this will enable the surface roughness requirements of the measuring surfaces to be met with from the facilities presently available in manufacturing units. These requirements had been provided depending upon the manufacturing tolerances of gauges.

The suggested materials for gauges have been given in **2**. The manufacturer has the freedom to select a suitable material according to his discretion so long as the requirements laid down in the specification are met with.

In the preparation of this standard (Part 1), considerable assistance has been derived from DIN 2239 January 1979 'Technical conditions of delivery for gauges for industrial length verification practice', issued by the DIN Deutsches Institut für Normung.

Other parts of the standard are as follows:

IS : 7018 (Part 2)-1983 Technical supply conditions for gauges: Part 2 Assembly and identification of plain plug gauges (size range from 1 up to and including 250 mm) (*first revision*).

IS : 7018 (Part 3)-1983 Technical supply conditions for gauges : Part 3 Assembly and identification of screw plug gauges for ISO metric screw threads (size range from M1 up to and including M200) (*first revision*)

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